UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/785,600	02/23/2004	Bruce W. Kneller	BKNL-001-101	3185

75436 7590 10/16/2008

MORSE, BARNES-BROWN & PENDLETON, P.C.
ATTN: PATENT MANAGER
RESERVOIR PLACE
1601 TRAPELO ROAD, SUITE 205
WALTHAM, MA 02451

EXAMINER	
BADIO, BARBARA P	

ART UNIT	PAPER NUMBER
1612	

MAIL DATE	DELIVERY MODE
10/16/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/785,600	KNELLER, BRUCE W.	
	Examiner	Art Unit	
	Barbara P. Badio, Ph.D.	1612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *21-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Nonfinal Office Action on the Merits

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Duplicate Claims

2. The objection to claims 6, 13, 14 and 20 under 35 USC 101 as being substantial duplicates of claims 5, 7, 8 and 15, respectively is made moot by the cancellation of the instant claims.

Claim Rejections - 35 USC § 112

3. The rejection of claims 12, 16 and 18 under 35 USC 112, first paragraph, as failing to comply with the enablement requirement is made moot by the cancellation of the instant claims.

4. Claims 27-31, 33, 34 and 35 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for improving weight loss, increasing energy, reducing fatigue, increasing T3 thyroid hormone activity, improving memory, improving muscular wasting and increasing HDL, does not reasonably provide enablement for improving the health of a human irrespective of the condition of said human; improving immune responses and neurological diseases in general; improving HIV/AIDS, heart disease, lupus, diabetes, depression or low sex drive. The

specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

The factors to be considered in determining whether a disclosure meets the enablement requirement of 35 USC 112, first paragraph, have been described in *In re Wands*, 8 USPQ2d 1400 (Fed. Cir. 1988). Among these factors are (1) the nature of the invention, (2) the breadth of the claims, (3) the state of the prior art, (4) the predictability or unpredictability of the art, (5) the amount of guidance or direction presented, (6) the presence or absence of working examples, (7) the relative skill in the art and (8) the quantity of experimentation necessary. When the above factors are taken into consideration, the examiner's position is that one skilled in the art could not perform the invention commensurate in scope with the instant claim without undue experimentation.

The claimed invention is a method of "improving the health of a human" comprising the administration of the claimed compounds. The instant claims also recite "improved immune response", "improved neurological condition" as well as improving "HIV/AIDS, heart disease, lupus, diabetes and low sex drive".

According to the present specification, no data has been published to support the utilization of 7-oxo DHEA in lupus, mood, hear t disease, diabetes, sex or anti-aging (see page 8 of the present specification). Based on said disclosure and the lack of showing in the present specification, in order to practice the claimed invention, the skilled artisan at the time of the present invention would have to determine the

effectiveness of the claimed compounds in improving each of the claimed condition. Because of the knowledge in the art as discussed by the instant specification and the lack of guidance and/or working examples in the present specification, the amount of experimentation necessary to practice the claimed invention would be undue.

Additionally, based on the numerous conditions encompassed by the broad recitation of "neurological condition" and “immune response” and the complexity of the human body as well as the differences in the underlining cause(s) of each of said conditions encompassed by said phrases and the lack of showing in the medical art of a single agent that is useful in improving all neurological or immune condition, the skilled artisan in the art at the time of the present invention would doubt the claimed compounds would be useful in improving every biological disorder as encompassed by the instant claims. Thus, in order to practice the claimed invention, the skilled artisan in the art at the time of the present invention would have to determine the ability of claimed compounds in improving every condition encompassed therein. Because of the knowledge in the medical art, the quantity of experimentation necessary to practice the claimed invention would be undue.

Lastly, the instant claims recite a method of improving the health of a human and, thus, encompass treating any human irrespective of the condition of said human with the claimed compound. The art, as discussed by the present specification, teaches 7-keto DHEA is useful in treating several conditions, for example, muscular wasting in HIV patients, fat reduction and memory improvement. However, the medical art lacks teaching of a single agent that is useful in improving the condition of a human

irrespective of the cause of said condition. The present specification lacks guidance as to how the skilled artisan would utilize the claimed compound in improving the health of any human irrespective of the condition of said human. Therefore, in order to practice the claimed invention, the skilled artisan in the art at the time of the present invention would have to first determine the effectiveness of the claimed compound in improving the health of a human irrespective of the condition of said human. Again, because the present lack working example(s) or guidance and the art lack a showing of a single agent useful in "improving" the health of a human irrespective of the condition of said human, the quantity of experimentation necessary to practice the claimed invention would be undue.

5. The rejection of claims 1-20 under 35 USC 112, second paragraph, as being indefinite is made moot by the cancellation of the instant claims.

6. Claims 27-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The instant claims are drawn to a method for **"improving the health"** of a human by administering the claimed compound. It is unclear what is meant by the above-mentioned phrase. Does applicant intend treatment of the condition affecting said human? If not, how does the claimed compound improve the health of said human? For example, is the claimed compound useful in "improving the health" of a

human with breast cancer? If so, does it decrease the rate of proliferation of said cancerous cells?

Claim Rejections - 35 USC § 102

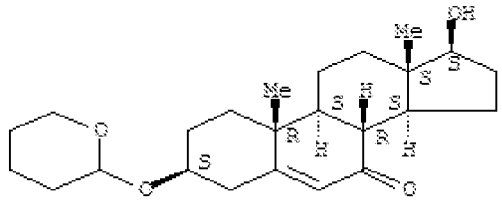
7. The rejection of claims 1, 5-8, 12-17, 19 and 20 under 35 USC 102(b) over Lardy et al. (WO 95/06472) is made moot by the cancellation of the instant claims.

8. Claims 21, 22, 25 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Joska et al. (Collection of Czechoslovak Chemical Comm., 1961).

Joska et al. teaches several analogues of androgens such as

RN 114507-93-6 CAPLUS
CN Androst-5-en-7-one, 17-hydroxy-3-[(tetrahydro-2H-pyran-2-yl)oxy]-, (3β,17β)- (9CI) (CA INDEX NAME)

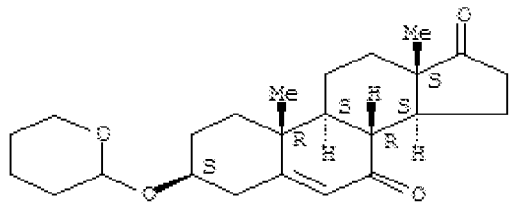
Absolute stereochemistry.



and

RN 102890-86-8 CAPLUS
CN Androst-5-ene-7,17-dione, 3β-[(tetrahydro-2H-pyran-2-yl)oxy]-, (3β)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



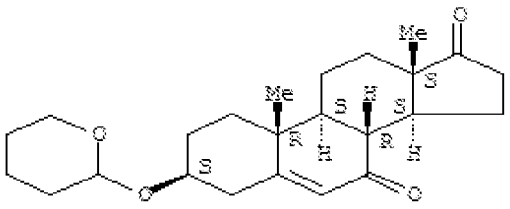
(see the entire article, especially pages 1647, 1655 and 1656, compounds XXIV and XXVI). The compounds taught by the reference are encompassed by the instant claims.

9. Claims 21, 22 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Marwah et al. (Steroids, 2001).

Marwah et al. teaches the synthesis and biological activity of steroids ethers such as

RN 102890-86-8 CAPLUS
CN Androst-5-ene-7,17-dione, 3β-[(tetrahydro-2H-pyran-2-yl)oxy]-, (3β)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



(see the entire article, especially page 587, Table 1, compound 37). The compound taught by the reference is encompassed by the instant claims.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

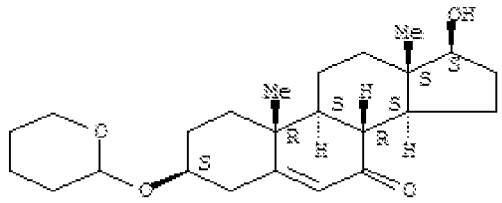
> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 21-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joska et al. (Collection of Czechoslovak Chemical Comm., 1961), Marwah et al. (Steroids, 2001), Lardy et al. (US 5,506,223) and Pauza et al. (US 5,885,977) in combination.

Joska et al. teaches several analogues of androgens such as

RN 114507-98-6 CAPLUS
CN Androst-5-en-7-one, 17-hydroxy-3-[(tetrahydro-2H-pyran-2-yl)oxy]-, (3β,17β)- (9CI) (CA INDEX NAME)

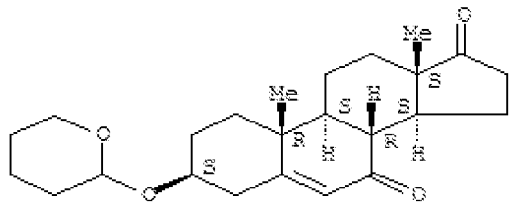
Absolute stereochemistry.



and

RN 102890-86-8 CAPLUS
CN Androst-5-ene-7,17-dione, 3β-[(tetrahydro-2H-pyran-2-yl)oxy]-, (3β)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.

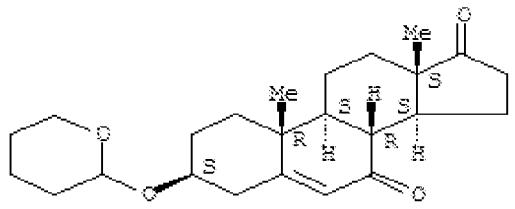


(see the entire article, especially pages 1647, 1655 and 1656, compounds XXIV and XXVI).

Marwah et al. teaches the synthesis and biological activity of steroids ethers such as

RN 102890-86-8 CAPLUS
CN Androst-5-ene-7,17-dione, 3β-[(tetrahydro-2H-pyran-2-yl)oxy]-, (3β)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



(see the entire article, especially page 587, Table 1, compound 37). The reference teaches the compounds are more effective than 7-oxo-DHEA in inducing the formation of liver thermogenic enzymes (see data on page 587, Table 1). Marwah also teaches DHEA decreases body fat, enhances immune system, decreases blood glucose and enhances memory (see page 581, col. 1, Introduction).

Lardy et al. teaches Δ5-androstenes, such as Δ5-androstene-3β-ol-7,17-dione and Δ5-androstene-3β,17β-diol-7-one, and derivatives thereof are useful in promoting weight control (see the entire article, especially col. 1, line 53 – col. 2, line 10). The reference teaches derivatives wherein one or more of the hydroxyl or keto substituent is a group convertible by hydrolysis, e.g., esters.

Pauza et al. teaches the utilization of Δ5-androstenes, such as Δ5-androstene-3β-ol-7,17-dione and Δ5-androstene-3β,17β-diol-7-one, for treatment of HIV wasting syndrome (see the entire article, especially col. 2, lines 3-8). The reference also teaches the utilization of precursors which are readily metabolized in vivo to the parent compound (see col. 2, lines 3-8).

As disclosed by the present specification and taught by the cited references, 7-oxo DHEA is known to have a variety of effects, such as promoting weight maintenance, treating HIV wasting syndromes, fat reduction, enhanced memory, etc. The instant claims differ from the reference by reciting ether derivatives of 7-oxo-DHEA. However, (a) Lardy and Pauza teaches the use of derivatives that are readily converted to the parent compound and (b) the art teaches ethers, like esters, are known prodrugs and are readily hydrolyzed in vivo (see for example, US 5,728,396, col. 11, lines 48-51; US 6,395,299, col. 59, lines 27-30). Additionally, it is well known in the pharmaceutical art to use prodrugs to increase the bioavailability as well as reduce the side effects of a drug. Therefore, it would have been obvious to the skilled artisan in the art at the time of the present invention to utilize the compounds of Joska and Marwah, which are prodrugs of Δ5-androstene-3β-ol-7,17-dione and Δ5-androstene-3β,17β-diol-7-one, with the reasonable expectation that said compounds would be useful in the treatment of similar conditions as taught by the art for the parent compounds. The motivation to make ethers derivatives would be based on the desire to obtain a prodrug that would increase the bioavailability as well as decrease the adverse effect of the parent compounds.

Telephone Inquiry

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara P. Badio, Ph.D. whose telephone number is 571-272-0609. The examiner can normally be reached on M-F from 6:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frederick Krass can be reached on 571-272-0580. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Barbara P. Badio, Ph.D./
Primary Examiner, Art Unit 1612